

A CAMPONOTUS MERMITHERGATE FROM
ARGENTINA

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In a recent paper¹ I called attention to the different effects produced by *Mermis* parasitism in female ants belonging to different castes and natural subfamilies. When the queens of *Lasius* species (subfam. Formicinae) are infected and converted into mermithogynes, the observable effects are a slight diminution in the size of the head and thorax and a pronounced diminution in the size of the wings. In various genera of Ponerinae (*Euponera*, *Pachycondyla*, *Odontomachus*) the mermithized workers, or mermithergates, have the head narrowed, small ocelli may be developed and some of the other parts of the body may come to resemble those of the queen. In the genus *Pheidole* (subfam. Myrmicinae), which has three distinct female castes—queen, soldier and worker—the infected individuals usually present a peculiar blending of the characters of all three phases. The only recorded example of a mermithized worker Formicine ant is a specimen of the large *Camponotus* (*Tanæmyrmex*) *pompejus* Emery subsp. *cassius* Wheeler, which I described from the Belgian Congo. This specimen was unmodified and, apart from the swollen gaster containing the coiled *Mermis*, had all the characters of a normal worker minor.

While studying the large collection of ants made by Prof. J. C. Bradley during 1919-20 in South America, I have found another mermithized worker Formicine, which is more interesting than the Congolese specimen. This is a specimen of *Camponotus* (*Tanæmyrmex*) *punctualatus* Mayr. subsp. *minutior* Forel, a common ant in the Argentine and represented in Professor Bradley's collection by several series of major and minor workers taken at Laguna Paiva, Posadas, La Quiaca, San Juancito and Coquin. The mermithergate was taken in the locality last mentioned, which is in the

¹*Mermis* Parasitism and Intercastes among Ants. Journ. Exper. Zool. 50, 1928 pp. 165-237, 17 figs.

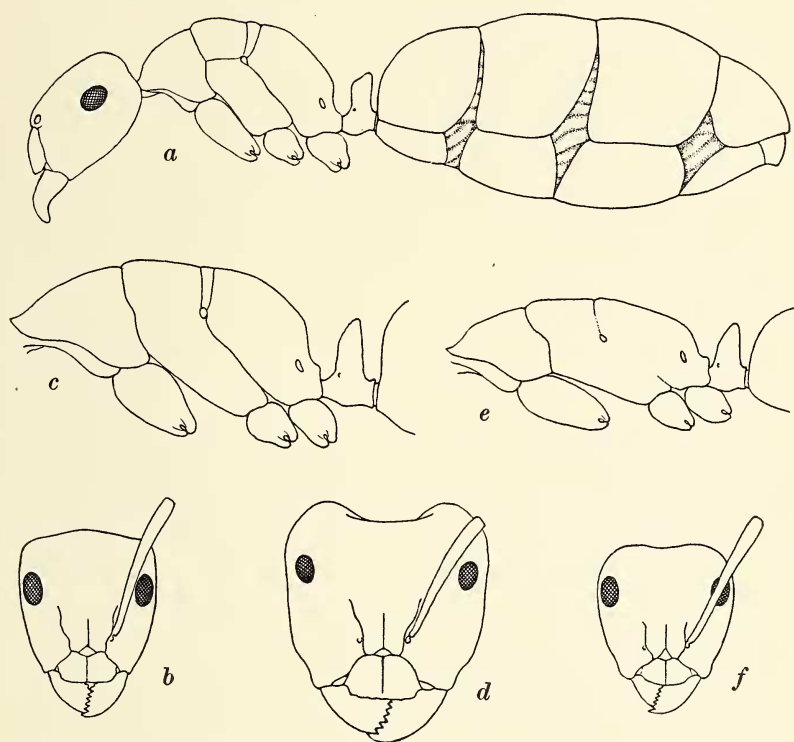


Fig. 1. *Camponotus (Tanæmyrmex) punctulatus* Mayr subsp. *minutior* Forel. *a*, mermithergate, in profile; *b*, head of same, dorsal view; *c*, thorax and petiole of normal worker maxima; *d*, head of same; *e*, thorax and petiole of normal worker minima; *f*, head of same.

Sierra de Cordoba. *C. punctulatus* is a highly variable species of which some 16 subspecies and varieties have been described, ranging over Argentina, Patagonia, Bolivia, Peru and Southern Brazil (Rio Grande do Sul and Sao Paulo). One variety, *pergandei* Emery, is recorded from Mexico.¹

The normal worker major of *C. punctulatus minutior* (Fig. 1, *c* and *d*) measures 6-7.5 mm., the worker minor (Fig. 1 *e* and *f*) 3.5-5 mm., the fertile female, or queen 11 mm. (according to Mayr.). I have not seen specimens of the queen *minutior*, but there are in my collection specimens of this caste belonging to the typical *punctulatus* and its subsp. *andigena* Emery from Argentina, Bolivia and Peru. Both of these differ from the subsp. *minutior* only in size, sculpture and pilosity and in having the head, thorax and petiole black instead of red or reddish brown.

The mermithergate (Fig. 1*a*) measures 7.3 mm. Its head (*b*) is much smaller than that of the worker major (*d*) and shaped more like that of the queen than the worker minor (*f*). This is especially true of its occipital region. There are no ocelli on the vertex, but these are small and widely separated in the queen. The mandibles are more convex than in the worker minor and therefore more like those of the major and queen. The clypeus, too, in possessing a more pronounced subrectangular anterior lobe is of the queen and worker major type. On the other hand, the antennal scapes of the mermithergate are long and slender and extend well beyond the posterior corners of the head as in the worker minor, whereas the scapes of the major and queen are much shorter in proportion to the dimension of the head. The tho-

¹As Santschi has shown (Ann. Soc. Ent. France 88, 1919 p. 386), Mayr's original description of *C. punctulatus* (Annuar. Soc. Nat. Modena 3, 1868 p. 161) was drawn from at least three different forms of the species, namely, the subsp. *minutior* (Forel 1886), with red head and thorax, the subsp. *imberbis* Emery var. *cruenta* Emery (1905), with black head and red thorax, and the form with black head and thorax, which Emery (1887) regarded as the type. Since Mayr mentions the form with *minutior* coloration first in his description of the worker and since the only female he describes belongs to this same form, the black form should have been given a new name and Forel's *minutior* regarded as a synonym of Mayr's *punctulatus*. It may be best, however, to leave this nomenclatorial adjustment to some future monographer of the species and its numerous subspecies and varieties.

rax, though very small, is more strongly convex and arched above than in either of the sterile castes. While it resembles the thorax of the queen, the sclerites, especially the mesonotum, are smaller, but this has distinct lateral sutures as in the queen. These sutures are absent in both major and minor workers, though sometimes indicated by faint lines in the former. There is a distinct metanotal sclerite in the mermithergate, of the same form as in the major (absent in the minor). The petiole is peculiar and apparently somewhat deformed anteriorly, though higher and broader than in the minor and therefore more of the major and queen type. The gaster is enormously distended (nearly 4 mm. long) with one or possibly several *Mermis*, the compact coils of which are visible through the thin, stretched, intersegmental membranes. The legs are slender, like those of the minor worker, but longer.

In its coarser sculpture, i. e., in the dense punctuation of the head and thorax, the mermithergate resembles the worker major and queen rather than the minor. The same is true of the conspicuous elongate punctures on the occiput, pro- and mesonotum. These are well-developed in the mermithergate as in the major, but obsolete in the minor. In the queen they are less developed than in the mermithergate. The pilosity of the latter is also like that of the major, i. e., more abundant than in the minor and less abundant than in the queen. The head and thorax of the mermithergate are decidedly less reddish and more brownish than in the two worker castes. In coloration it is therefore more like the queen, which Mayr describes as "rufa, capite postice opaco nigro, antice obscure castaneo-fusco, mandibulis castaneis, antennis læte castaneis, thorace supra subnitido castaneo, abdomine nitido nigro." This agrees well with the color of the mermithergate, except that its head is castaneous brown and not black posteriorly.

The *C. minutior* mermithergate above described is of more than usual interest on account of its close resemblance to the mermithized specimens of *Pheidole* in exhibiting a mixture of worker major, worker minor and queen characters in the structure of the head, thorax, petiole and appendages, instead of being an unmodified worker minor like

the *C. cassius* described from the Congo. If the hypothesis which I advanced in my paper of 1928 be accepted, the latter specimen may be supposed to have been infected by Mermis as an adult worker minor larva just before spinning its cocoon, whereas the *minutior* mermithergate was infected as a queen larva which had developed slightly beyond the stage at which, by some difference in feeding, it might have been converted into a normal worker major.

DIPTERA DESTROYING SNAILS

In a series of papers entitled "Natural History Notes from North Carolina" (Journ. Cincinnati Soc. Nat. Hist., vol. 17, p. 72, 1894), A. G. Wetherby under *Zonites ellioti* Redf. says: "This shell is destroyed by a parasitic larva, the imago of which is a small and active species of Diptera. The grown larva occupies the shell as a pupa house after devouring the inmate. I have noticed this habit of the Diptera in the case of but one other species, and that is *Polygyra fastigans* Say. At the only locality where I have collected this latter species, more than half the snails were affected, and the number of dead shells holding the empty pupa cases, were sufficient testimony to the activity of the parasite."

It would be interesting to know what this fly really is. A small Sarcophagid—*Helicobia helcis* Town. was bred from a snail—*Polygyra thyroidus* Say. I have always looked up this record as only accidental, for the fly is common and has been bred from a number of species of insects, and in many cases is considered a true parasite (Aldrich, "Sarcophaga and Allies in North America, pp. 158-161, 1916). Dr. J. Bequaert however, has described a Sarcophagid representing a new genus and species—*Malacophagula neotropica* from a snail—*Bulimulus tenuissimus* at Para, Brazil, which he considers a true parasite of the snail (Journ. Parasitology, vol. XI, pp. 201-212, 1925).

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